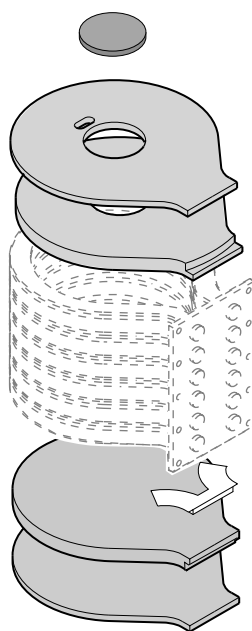


STA-RITE®

Heater Insulation Kit



MEMBER



NATIONAL
SPA & POOL
INSTITUTE

Sta-Rite Pool/Spa Group

293 Wright Street, Delavan, WI 53115

North America: 800-752-0183, FAX 800-582-2217

International: 262-728-5551, FAX: 262-728-4461, TELEX: ITT 4970245

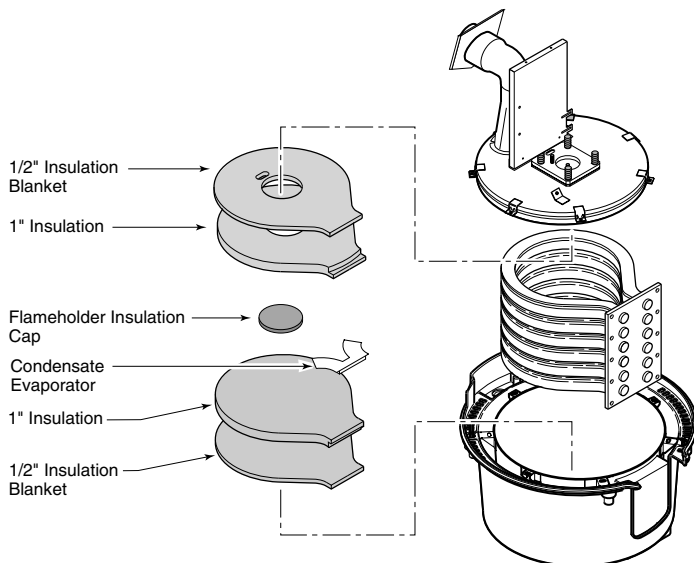
www.sta-ritepool.com

Union City, TN • Delavan, WI • Mississauga, Ont. • Murrieta, CA

© 2003, Sta-Rite Industries, Inc.

Printed in U.S.A.

S430 (Rev. 2/14/03)



Tools/Parts Required

Flat Screwdriver, Phillips Screwdriver

1/4" and 3/8" Socket Sets with Extenders

Sockets needed: 1/4", 5/16, 11/32, 7/16, 1/2, 9/16, 7/8

Rubber Mallet

Torque Wrench calibrated in **Inch-Lbs.**

High Temperature RTV (600° F. Cont.; 700° F. Intermittent)

Flame Holder/Adapter Plate Gaskets

(2 - Part No. 42001-0065)

14" & 12" Pipe Wrenches (1 Each) or 2 Channel-Lock Pliers

Optional: Lifting Gear capable of handling 150 Lbs.

Safety Precautions:

⚠ WARNING Risk of electrical shock, fire or explosion.

Disconnect all power to the heater and close the external manual gas valve at start of this procedure. Check for gas leaks with a soapy water solution after reassembly.

⚠ WARNING Risk of carbon monoxide poisoning from indoor units if exhaust vent joints are not sealed. Check all vent joints for leakage after reassembly.

⚠ WARNING Heavy parts; can cause personal injury.

When lifting, use all proper precautions for the weights involved.

⚠ CAUTION Uncured RTV sealants can cause eye irritation. Follow manufacturer's instructions when using RTV sealants.

Location

The Insulation is located inside the Combustion Chamber.

Function

The insulation increases the thermal efficiency of the heater and prevents overheating of parts outside the combustion chamber.

Servicing Procedure (See Figure 1):

⚠ WARNING Heavy parts; can cause personal injury. When lifting, use all proper precautions for the weights involved.

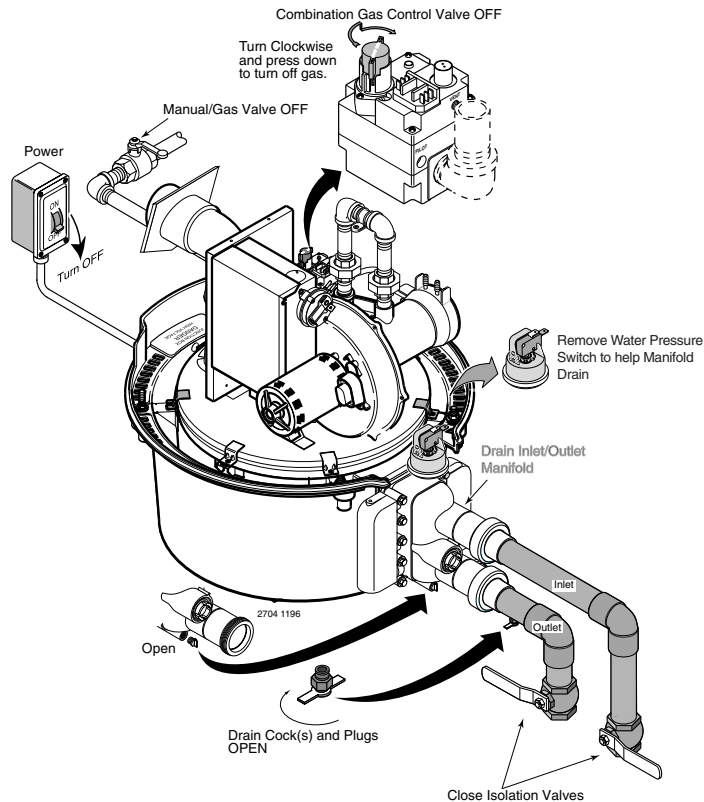


Figure 1: Isolate and Drain Heater; Disconnect Power

1. Turn off the filter pump and all electrical power to the heater. Close the external Manual Gas Valve.
2. If the heater is below the water level of the pool, close the isolation valves to avoid draining the pool.
3. Remove the drain plug under the manifold and drain the heater.
4. While the heater is draining, remove the upper left and upper right jacket halves.
5. Remove the switch covers on both sides of the manifold and unplug the wires from the Automatic Gas Shutoff, the High Limit Thermostat, and the Thermistor (See Figure 2, Key No. 1). If necessary, disconnect the Water Pressure Switch and remove it.
6. Disconnect exhaust vent from indoor units.
7. Disconnect the gas pipe at the external union between the heater and the external manual gas valve.
8. Disconnect the incoming electrical wires at the junction box and cut the wire tie holding the Wiring Harness to the Lower Enclosure (See Figure 2, Key No. 2).
9. Disconnect the inlet and outlet unions and move the heater enough to allow removal of the manifold adapter and the inlet/outlet manifold as a unit (See Figure 2, Key No. 3).

10. Unscrew the bolts that attach the manifold adapter to the tube sheet and remove the manifold adapter and the inlet/outlet manifold as a unit.
 11. Carefully disconnect all three metering tubes from the Combustion Air Blower Assembly (1 to the Combination Gas Control Valve, 2 to the Air Flow Switch).
 12. Remove the bolt from the Gas Piping Clamp.
 13. Unplug all wires to the Control Box. Unscrew three nuts and remove the Control Box, the Heat Shield, and the Membrane Pad and Cover as a unit (See Figure 2, Key No. 4).
 14. Unscrew the four nuts holding the Blower Adapter Plate to the top of the Combustion Chamber and remove the Combustion Air Blower, the Igniter, the Combination Gas Valve and associated piping and the Blower Adapter Plate as a unit (See Figure 2, Key No. 5). Remove the Flameholder and Flameholder Cone (if used).
- NOTICE:** BE CAREFUL not to break or crack the igniter – it is fragile!
15. Unscrew the nuts holding the Combustion Chamber top to the Combustion Chamber body.
 16. Unscrew 4 hold-down nuts from the hangers supporting the Combustion Chamber.
 17. Wrap a shop rag around each hanger, one at a time (be careful; it's sharp) and hammer down on the Lower Enclosure while lifting the hanger by the shop rag. This will lift the hanger up off of the hold-down bolt.
 18. Lift the Combustion Chamber out of the Lower Enclosure.

▲WARNING Heavy parts; can cause personal injury. When lifting, use all proper precautions for the weights involved.

19. Cut the RTV all the way around the top of the Combustion Chamber with a screwdriver.

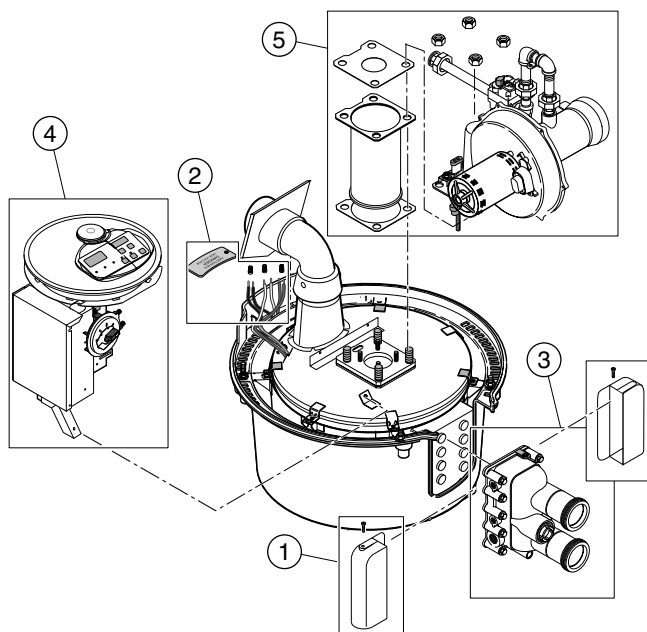


Figure 2: Removal of major sub-assemblies

20. With a mallet and screwdriver, go around the Combustion Chamber cover tapping *up* until the RTV separates and releases the Combustion Chamber cover. Be careful not to damage the Combustion Chamber.
 21. Remove the Combustion Chamber cover.
- ▲WARNING** California's Proposition 65 lists **Refractory Ceramic Fibers heated to 1800° F or higher as a possible human carcinogen.** See the warning box on Page 6 for further information. Call 1-800-752-0183 for a Material Data Safety Sheet (MSDS).
22. Remove the top insulation, the Heat Exchanger Coil, the Condensate Evaporator, the Bottom Insulation, and the metal spacer from the Combustion Chamber. Do not remove the RTV that seals the manifold mounting plate to the combustion chamber.
 23. Clean up the Combustion Chamber, the Combustion Chamber cover, and the Spacer. Be sure to completely remove all RTV from the Combustion Chamber and Combustion Chamber top.
 24. Reinstall the clean spacer in the Combustion Chamber. Install one 1/2" white Insulation Blanket on top of the spacer and one piece of 1" "M" insulation on top of the Blanket. Make sure that the insulation is centered in the Combustion Chamber.
- NOTICE:** Model SR/SRC200 heaters built before 1/1/98 require two 1/2" Insulation Blankets.

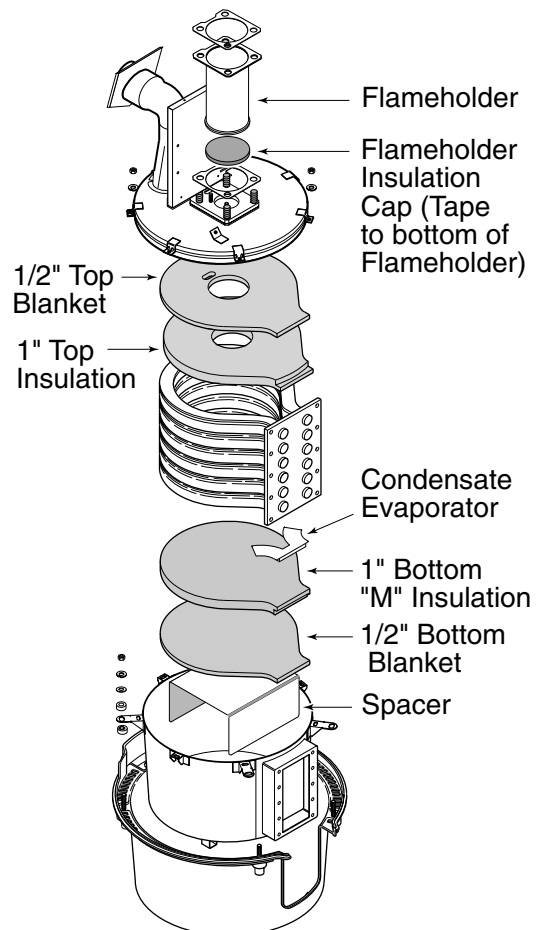


Figure 3: Correct order for installation of insulation.

25. Install the new Condensate Evaporator on top of the insulation.
26. Clean the tubesheet and O-Ring sealing surfaces (see Figure 4).
27. Reinstall the Heat Exchanger Coil on the Insulation. Pull the Heat Exchanger Coil and the Bottom Insulation forward together to align with the mounting plate (see Figure 5).

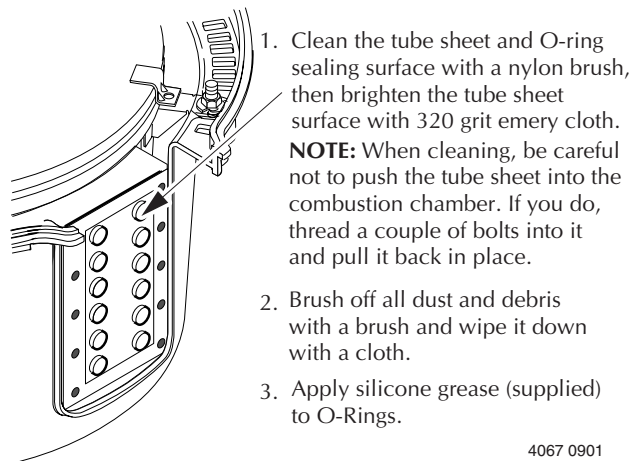


Figure 4: Clean the Tube Sheet and O-Ring sealing surfaces thoroughly as described above.

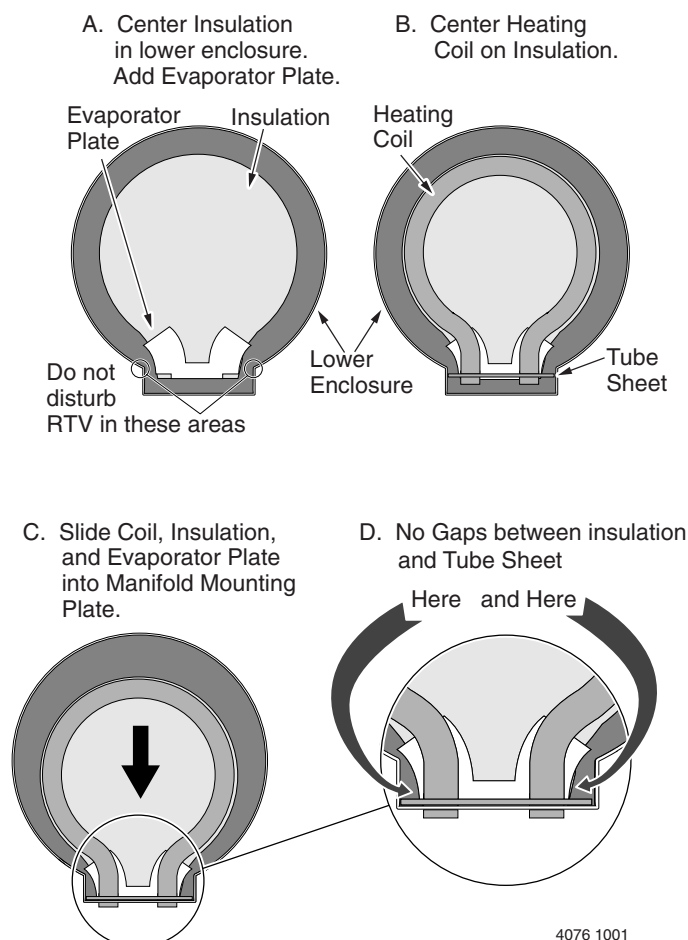
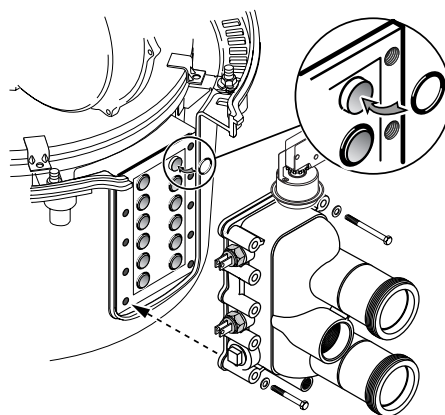
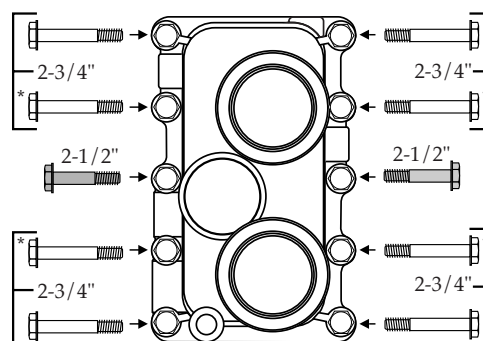


Figure 5: Align bottom insulation and Heat Exchanger Coil as shown.

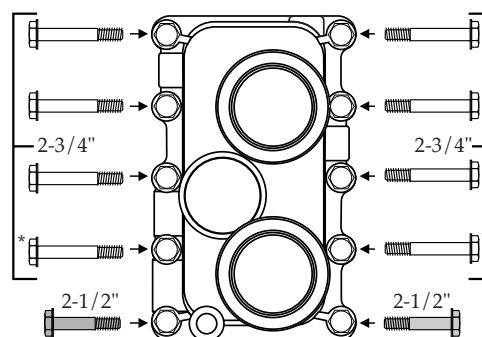
28. Install the manifold and manifold bolts. See Figure 6 for long and short bolt positions.



**Models SR200/SRC200□
Short Bolt Placement**



**Models SR400/SRC400□
Short Bolt Placement**

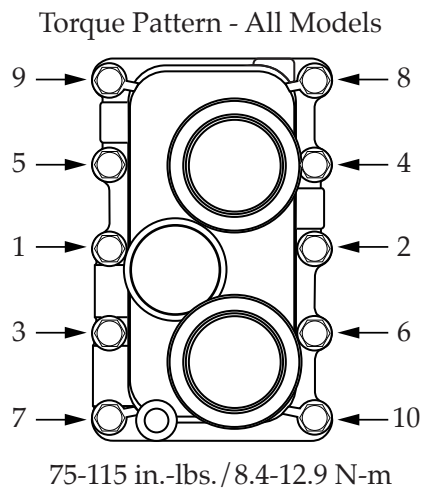


***Hand-tighten all long bolts; then tighten indicated bolts enough to allow short bolts to engage.**

- Install O-rings on tube ends; install manifold.
- **SR/SRC200** and **SR/SRC400**: Tighten all long bolts **HAND TIGHT**; then tighten the bolts next to the short bolts a little more with a wrench.
- Insert and start the two short bolts until they engage three or four threads, then tighten all bolts according to the normal torque pattern shown on Page 5.
- **SR/SRC333**: These models use long bolts only. Tighten all bolts **HAND TIGHT**; then tighten according to the normal torque pattern shown on Page 5.

Figure 6: Install bolts as shown.

29. Tighten the bolts to the torque spec as shown in Figure 7.



1. Make sure that all bolts are engaged and hand tight.
2. Torque the bolts in sequence as shown. Some noise (popping, etc.) is normal as you tighten.
3. Go around the manifold and retighten the bolts as needed to 75-115 in.-lbs. (8.4-12.9 N-m) (you may have to do this several times).

Figure 7: Torque Specs.

30. Turn on the water and check for leaks between the Manifold Adapter and the Tube Sheet.
31. Install one piece of 1" top Insulation on top of the Heat Exchanger and one 1/2" Insulation Blanket over the top Insulation. Make sure that the insulation is centered on the coil so that an equal number of heater coil fins shows around the insulation.
32. Apply fresh High Temperature RTV (600°F Continuous, 700° F. Intermittent rating) all the way around the inside top of the Combustion Chamber and the outside of the Combustion Chamber cover (see Figure 8).

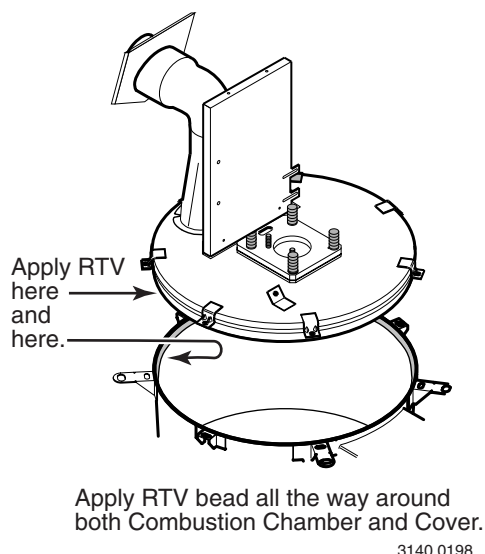


Figure 8: RTV Application For Reassembly

33. Reinstall the Combustion Chamber top and fasten with nuts on studs from Combustion Chamber body.
34. Reinstall the Combustion Chamber in the Lower Enclosure and fasten with hold-down nuts.
35. Reinstall the Flameholder and Flameholder Cone (if used), and then the Combustion Air Blower, the Igniter, the Combination Gas Valve and associated piping and the Blower Adapter Plate as a unit; use new gaskets. Be sure to reinstall the Insulation Cap on the bottom of the Flameholder. Tighten Adapter Plate nuts to 70-80 in.-lbs. torque. See Figure 9.

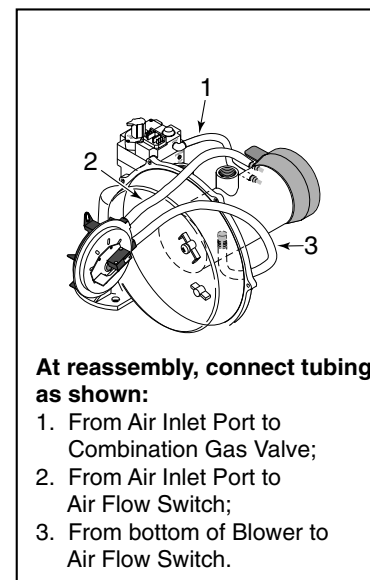
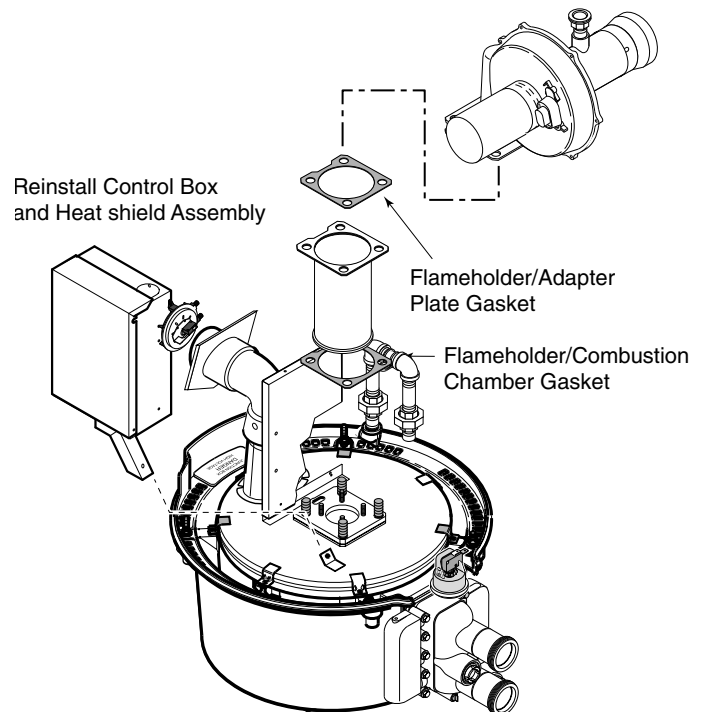


Figure 9: Make sure new gaskets are in place when reassembling combustion chamber.

36. Reinstall Control Box and Heat Shield assembly; fasten with three nuts.
37. Reconnect the water pressure switch (if necessary).
38. Reconnect the metering tubes from the Air Flow Switch and the Combination Gas Control Valve to the Combustion Air Blower Assembly (see Figure 9).
39. Reconnect exhaust vent pipe and seal with RTV or epoxy according to vent manufacturer's instructions.

⚠ WARNING Risk of carbon monoxide poisoning. Make sure that entire exhaust vent is sealed after reinstallation.

40. Reconnect all wiring. See Figure 10 for Junction-box connections, and see Page 7 for complete wiring schematic.
41. Before starting the heater, test for gas leaks from piping and around Combustion Chamber cover with a soapy water solution.
42. Check for water leaks at unions and at manifold flange (where it joins the tube sheet).
43. Reinstall jacketing and test heater by running it through one complete cycle. Test for exhaust leaks from exhaust vent pipe while cycling heater.
44. Heater is ready for service.

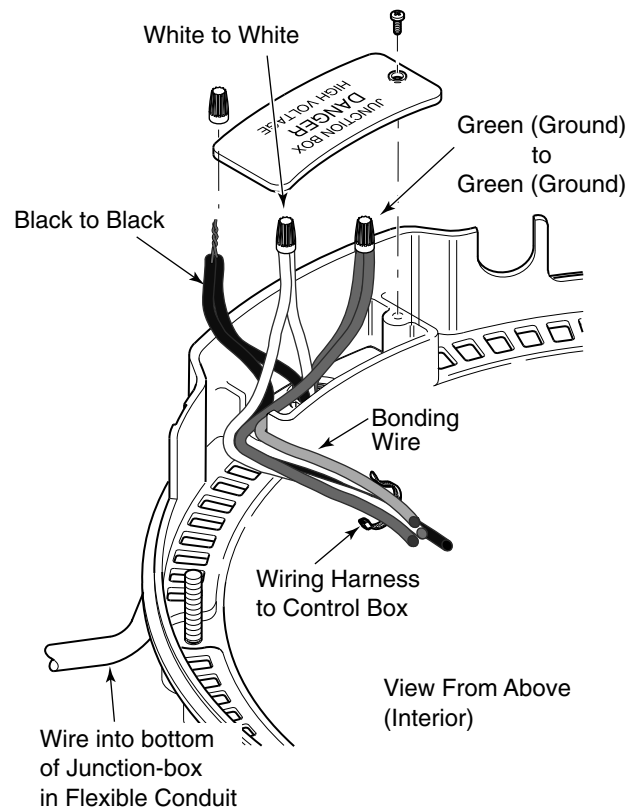


Figure 10: Junction Box Wiring Connections

For detailed installation, operation, maintenance and safety information about the Sta-Rite pool heater, call customer service at 1-800-752-0183 and request a Sta-Rite Pool/Spa Heater Training and Service manual, publication S5066.

⚠ WARNING

Prolonged exposure to the ceramic fiber insulation in the combustion chamber may cause cancer. May also cause temporary eye, skin, or respiratory tract irritation. Avoid breathing fiber particulates and dust.

Wear a NIOSH/MSHA approved respirator, loose, long sleeved clothing, eye protection, and gloves when working with or around insulation. Wash work clothes separately. Rinse washing machine after use.

For first aid:

Eyes: Flush with water.

Skin: Wash with soap and water.

If swallowed: Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.

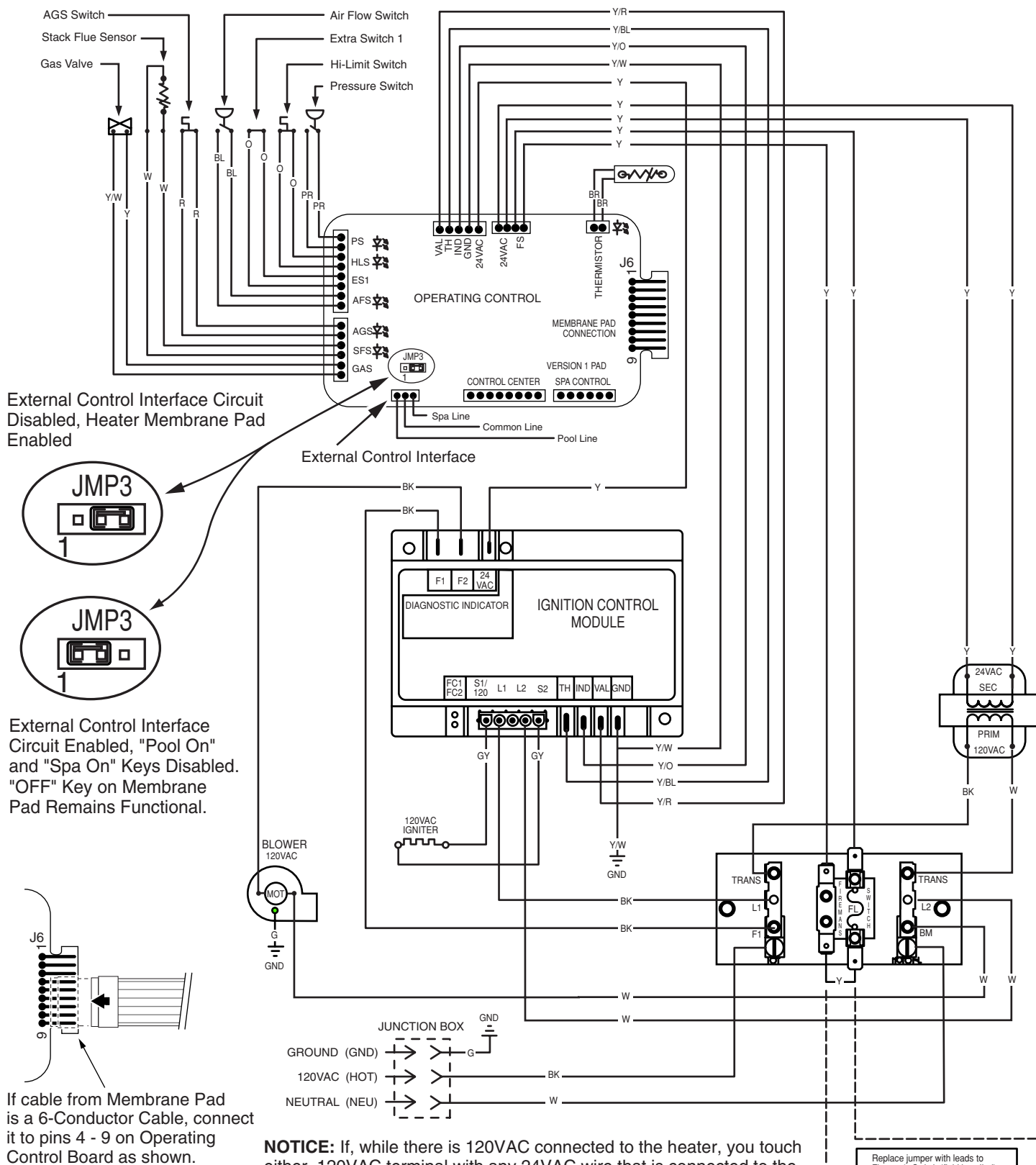
If inhaled: Get to fresh, clean air.

If any of the irritations above persist, seek medical attention immediately.

For additional product information or for a Material Safety Data Sheet (MSDS), call

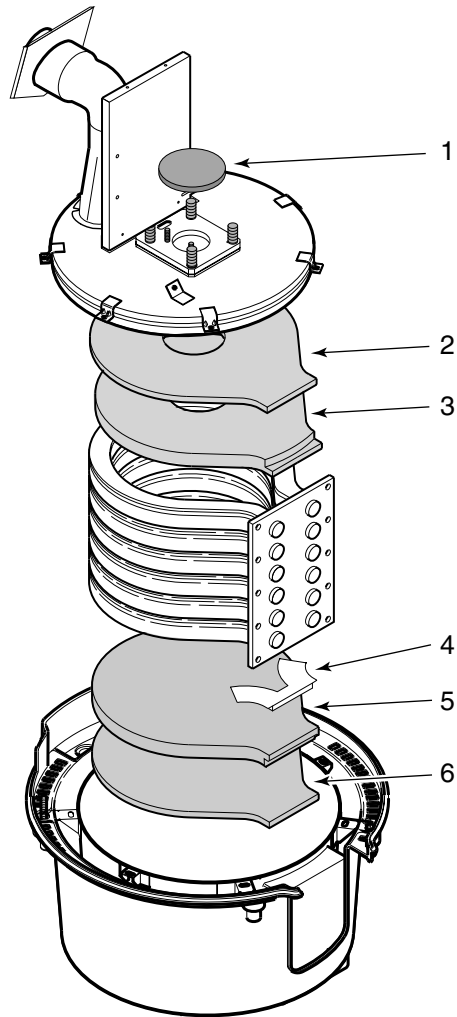
1-800-752-0183

CONNECTION DIAGRAM



NOTICE: If, while there is 120VAC connected to the heater, you touch either 120VAC terminal with any 24VAC wire that is connected to the control board (including the Fireman's Switch jumper), you will immediately destroy the control board and void the warranty.

3661 0200



REPAIR PARTS LIST

Key No.	Part Description	Qty.	Part No.
1	Flameholder Insulation Cap	1	42001-0075
2	1/2" Blanket	1	42001-0071
3	1" Top Insulation	1	42001-0070
4	Condensate Evaporator	1	42001-0065
5	1" "M" Insulation	1	42001-0072
6	1/2" Blanket*	1	42001-0073

* Model SR/SRC200 heaters built before 1/1/98 use 2 of Part No. 42001-0073.